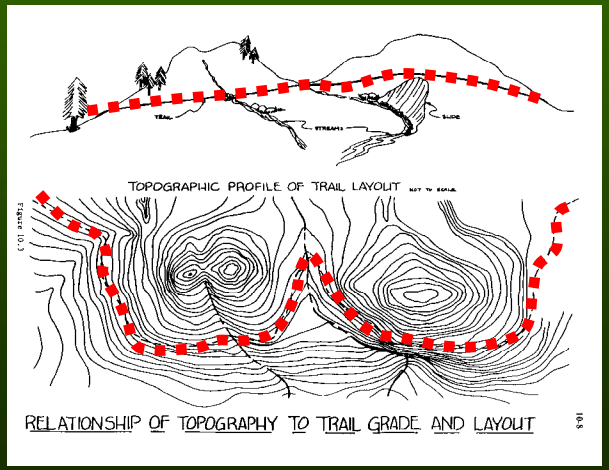
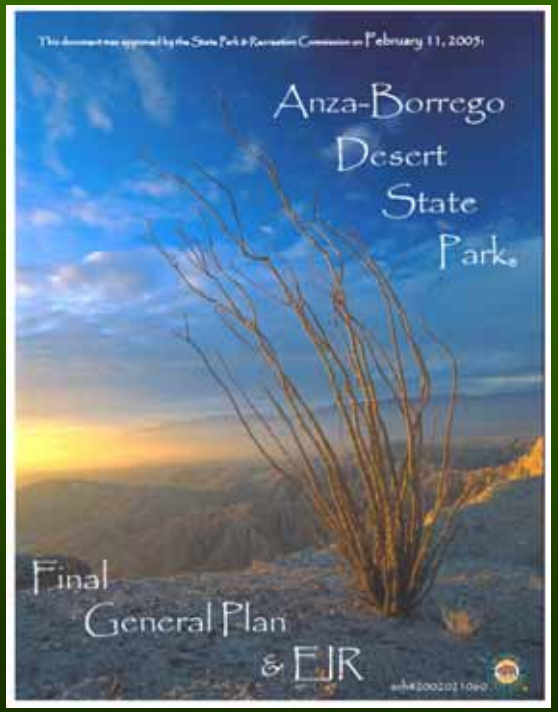
ACCESSIBILITY SECTION

CALIFORNIA STATE PARKS

REALITIES OF ACCESSIBLE TRAIL PLANNING, DESIGN AND CONSTRUCTION

PLANNING AND DESIGN





PLANNING AND DESIGN GOALS AND OBJECTIVES

- MEET ACCESSIBILITY GUIDELINES
- PROVIDE A WORTHWHILE VISITOR EXPERIENCE
- CONSIDER RESOURCE IMPACTS

ACCESSIBILITY GUIDELINES

- GUIDELINES SOMETIMES CHANGE, KNOW THE LATEST.

- YOU CAN ONLY BE HELD ACCOUNTABLE FOR DESIGNING TO THE GUIDELINES AT THE TIME.

DRAFT FINAL ACCESSIBILITY GUIDELINES FOR OUTDOOR DEVELOPED AREAS

Date: October 19, 2009

Introduction
- Background
- Whom Guidelines Apply To
- How to Submit Comments
- Contact for Further Information

General Issues:
- Format and Organization of Guidelines
- Conditional Exceptions
- Exceptions for Trails and Beach Access Routes
- Notification When Entire Trail or Beach Access Route Exempted
- Outdoor Constructed Features
- Concrete, Asphalt, or Board Surfaces

Summary of Provisions:
- Camping Facilities
- Picnic Facilities
- Viewing Areas
- Outdoor Recreation Access Routes
- Trailheads
- Trails
- Beach Access Routes

Future Rulemaking
Regulatory Process Matters
Text of the Draft Final Guidelines

Introduction

Background

On June 20, 2007, the Access Board issued a Notice of Proposed Rulemaking (NPRM) to establish accessibility guidelines pursuant to the Architectural Barriers Act (ABA) for camping facilities, picnic facilities, viewing areas, outdoor recreation access routes, trails, and beach access routes that are constructed or altered by or on behalf of the Federal government. The NPRM was based on a Regulatory Negotiation Committee Report.

Public hearings on the NPRM were held in Denver, CO on July 24, 2007; in Washington, DC on September 6, 2007; and in Indianapolis, IN on September 26, 2007. An information meeting on beach access routes was also held in Washington, DC on July 23, 2008. Over 600 comments were received on the NPRM.

1

Revised and updated from
California State Parks Accessibility Guidelines, 2005

California State Parks

Accessibility Guidelines

2009 Edition

Accessibility Section
Acquisition and Development Division

Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines

July 23, 2004

UNITED STATES ACCESS BOARD

A FEDERAL AGENCY COMMITTED TO ACCESSIBLE DESIGN

ACCESSIBILITY GUIDELINES

VISITOR EXPERIENCE

- AVOID CREATING ACCESSIBLE TRAIL FOR THE SAKE OF CREATING ACCESSIBLE PATHWAYS

- TRAILS SHOULD HAVE PURPOSE AND BENEFIT TO THE USER.
  - DESTINATIONS, SIGNIFICANT CULTURAL AND NATURAL EXPERIENCES.

- TRAILS SHOULD BE DESIGNED FOR ALL USERS TO INCLUDE DISABLED ACCESS. UNIVERSAL ACCESS.

VISITOR EXPERIENCE

CONSIDER CONNECTIONS TO OTHER ACCESSIBLE ELEMENTS

FISHING AREAS

RESTROOMS

PICNIC AREAS

CAMPSITES

VISITOR CENTERS

VISITOR EXPERIENCE

ACCESSIBILITY COMPLIANCE SHOULD BLEND WITH OR COMPLIMENT THE SURROUNDING ENVIRONMENT.

URBAN

URBAN

NATURAL

NATURAL

COMPLIMENT SURROUNDINGS

LINEAR GRADES

- LINEAR GRADES (SLOPES PARALLEL TO THE DIRECTION OF TRAVEL) ARE THE MOST IMPORTANT FACTOR IN DETERMINING ACCESSIBLE TRAIL PROJECTS

- BE CONSERVATIVE WHEN ESTABLISHING LINEAR GRADES ALONG THE TRAIL ROUTE.

- IF YOU DESIRE A SLOPE OF 8% LAY IT OUT AT 6% TO ALLOW FLEXIBILITY DURING CONSTRUCTION.

HYDROLOGY

- ACCESSIBILITY GUIDELINES WILL HAVE A SIGNIFICANT INFLUENCE ON THE HYDROLOGICAL CONDITIONS ALONG THE TRAIL

- RELATIONSHIP OF CROSS SLOPE TO LINEAR GRADE

HYDROLOGY

DRAINAGE CROSSINGS

- LINEAR GRADE AND CROSS SLOPE LIMITATIONS COULD CAUSE TRAIL INSTABILITY

HYDROLOGY

- NEED MORE BRIDGING STRUCTURES AND LONGER LESS STEEP DIPS TO ACCOMMODATE ACCESSIBILITY GUIDELINES



NONE ACCESSIBLE CROSSINGS



ACCESSIBLE CROSSINGS

TRAIL STRUCTURES

- ACCESSIBLE TRAIL TYPICALLY REQUIRES MORE STRUCTURES
- STRUCTURES REQUIRED TO MEET ACCESSIBILITY GUIDELINES
- STRUCTURES WILL ASSIST IN PROVIDING INCREASED SUSTAINABILITY.
- ACCESSIBLE TRAILS NEED TO BE MORE SUSTAINABLE IN ORDER TO REMAIN COMPLIANT.



TRAIL STRUCTURES

CAUSEWAY AND TURNPIKE

CONTROL CROSS SLOPE

KEEPING TRAIL DRY IN FLAT AREAS

CONTAIN SURFACE MATERIAL

APPROACH RAMPS

TRAIL STRUCTURES

RETAINING WALLS

CONTROL CROSS SLOPE (SWITCHBACK)

AVOID SIGNIFICANT RESOURCES

APPROACH RAMPS

CONTROL LINEAR GRADES

TRAIL STRUCTURES

BOARDWALKS AND PUNCHEONS

CROSSING SMALL DRAINAGES

CROSSING WETLANDS

PROVIDING FIRM/STABLE SURFACE

ESTABLISHING A DEFINED PATHWAY

TRAIL STRUCTURES

BRIDGES

MAJOR DRAINAGE CROSSINGS

TRAIL STRUCTURES

SURFACING FOR FIRM/STABLE

CONCRETE

BOARDWALK

ASPHALT

AGGREGATE/GRAVEL

NATIVE SOIL

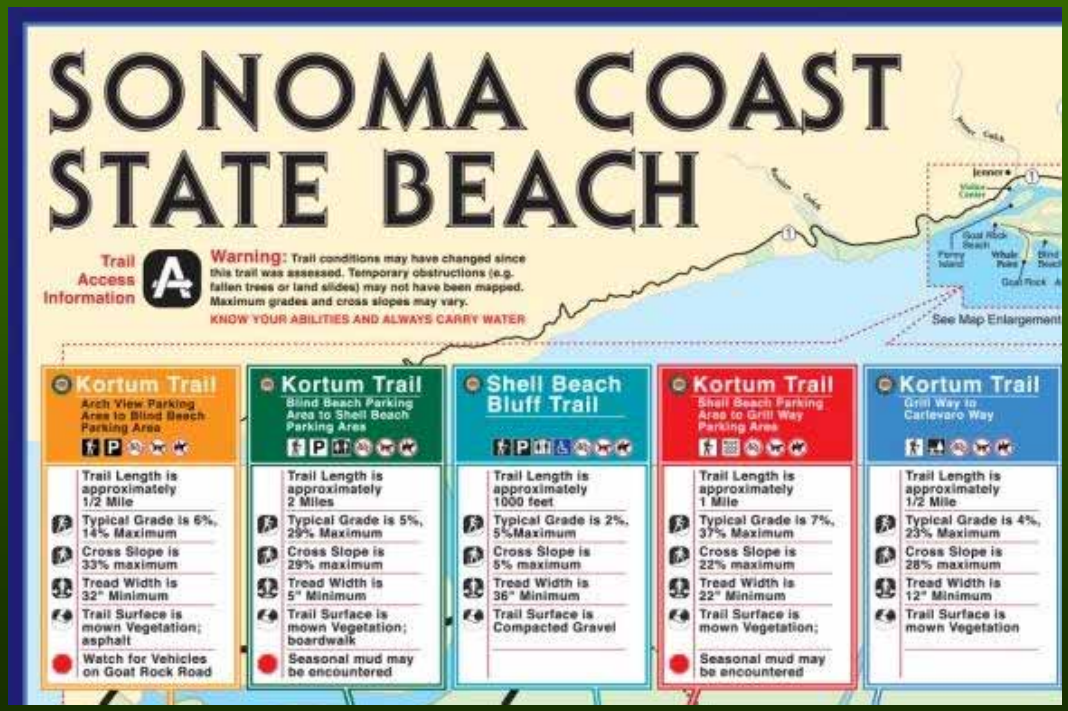
NOT FIRM/STABLE

SIGNS

SIGNS WILL NEED TO MEET ACCESSIBILITY GUIDELINES

- MOUNTING HEIGHT
- FONT SIZE
- CONTRASTING TEXT AND BACKGROUND

ACCESSIBLE TRAIL INFORMATION



SIGNS

DIRECTIONAL SIGNS

SIGNS

INTERPRETIVE SIGNS

PARKING

- **ACCESSIBLE TRAILS MUST HAVE ACCESSIBLE PARKING AND AN ACCESSIBLE ROUTE TO THE TRAIL.**

RESTROOMS

- **IF RESTROOMS ARE PROVIDED AT THE TRAILHEAD OR ALONG THE TRAIL THEY NEED TO MEET ACCESSIBILITY GUIDELINES**

TRAIL AMENITIES

- **TRAIL AMENITIES ALONG THE TRAIL NEED TO MEET ACCESSIBILITY GUIDELINES AND BE ALONG AN ACCESSIBLE ROUTE**

BENCHES

PICNIC TABLES

TRAIL AMENITIES

FISHING PIERS

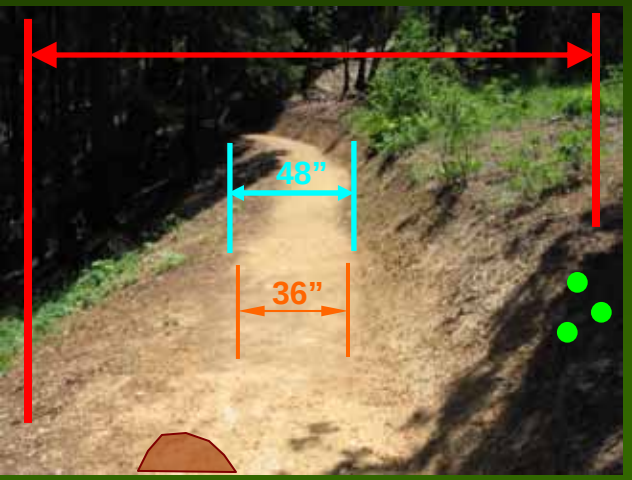
OVERLOOKS

CAMPSITES

VIEWING SCOPES

TRAIL FOOTPRINT

ACCESSIBLE TRAILS GENERALLY HAVE A LARGER FOOTPRINT



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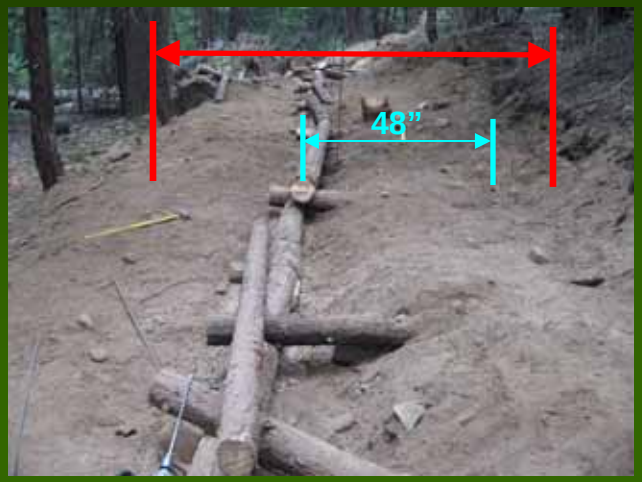


EXCAVATIONS FOR STRUCTURES

SWITCHBACKS

PASSING SPACES

VEGETATION ENCROACHMENT (BEFORE)

VEGETATION ENCROACHMENT (AFTER)

TRAIL FOOTPRINT CONTINUED..

- LARGER FOOTPRINTS COULD LEAD TO INCREASED ENVIRONMENTAL IMPACTS
  - SENSITIVE HABITATS
  - SENSITIVE SPECIES (ENDANGERED PLANTS AND ANIMALS)
  - WETLANDS
  - HISTORICAL AND ARCHEOLOGICAL SITES
- WHICH CAN LEAD TO
  - HIGHER LEVEL ENVIRONMENTAL COMPLIANCE (MND, EIR)
  - ADDITIONAL PERMITTING
  - MITIGATION

ACCESSIBLE TRAIL CONSTRUCTION

ACCESSIBLE TRAIL CONSTRUCTION

Non-Accessible vs. Accessible Trails

- Similar Construction Process and Physical Elements
- Following Tight Standards with Natural Materials
- Grades and Slope (linear and cross)
- Firm and Stable Surface (tread)
- Larger Footprint and Scale
- Communication and Attention to Detail
- Focus on Sustainability and Durability
- Higher Price Tag

HARD SURFACE TRAILS AND BOARDWALKS

- Concrete
- Asphalt
- Chip Seal
- Soil Cement
- Boardwalks

- Constructed on flatter terrain
- Urban settings
- Unique environmental settings (sand, wetlands, grasslands)
- Mechanical construction
- Conventional construction trades, techniques and materials

NATURAL SURFACE TRAILS

- Native Soils
- Aggregate Base
- Decomposed Granite
- Rock and Wood Structures

- Constructed in remote or natural settings and on steeper terrain
- Hand construction
- More difficult to construct given tight tolerances
- Requires specialized construction techniques to ensure conformity to accessibility standards

CRITCAL ELEMENTS IN ACCESSIBILE TRAIL CONSTRUCTION

- Construction Layout
- Trail Bench Construction
- Trail Surface

"Quality Control is Key for Success"

CONSTRUCTION LAYOUT

- Accurate flagging, staking and string lines are critical when setting grades for trail bench and structures
- Set accurate grade markers between control points

Tight flag final alignment….

CONSTRUCTION LAYOUT

- Locate beginning and end of structures
- Set string line to visualize top of structure/final tread

Identify and protect sensitive natural and cultural areas during layout...

Be careful not to dislodge or alter your flags or string lines when working around them…

CONSTRUCTION LAYOUT

Accurate layout ensures that all trail features fit seamlessly….

TRAIL BENCH CONSTRUCTION

- In general, accessible trails will require increased quantities of clearing, grubbing and excavation
- Full bench construction only, do not over excavate tread during initial bench construction

TRAIL BENCH CONSTRUCTION

- Hit linear grades on bench construction
- Cross slope should be relatively flat
- Count on unforeseen drainage and subsurface conditions that may require adjustments in the field

Initial bench will be misshapen construction equipment….

TRAIL BENCH CONSTRUCTION

- Construct trail 4’ bench minimum for a 3’ wide usable final trail width (5’ bench for 4” trail)

Inside and outside hinge areas will be compromised due to sloughing and settling…leaving 3’ of usable trail…

TRAIL SURFACE CONSTRUCTION

- Substantial attention is devoted to creating well shaped, durable, firm and stable surfaces

- Proper material selection
- Proper compaction
- Proper shaping

TRAIL SURFACE CONSTRUCTION

- Not all aggregate base is not created equal…

Hand select material at quarry for desirable traits and construct test sections…

Ask local trail builders where to find local material sources…

TRAIL SURFACE CONSTRUCTION

- Native soil surfaces are difficult to shape unless soil conditions are just right
- Aggregate base surfaces tend to be the best performers and are easier to shape

TRAIL SURFACE CONSTRUCTION

- Finished cross slope and crowned trail need to compensate for initial settlement and wear

Smart levels are typically used to check cross slope...

TRAIL SURFACE CONSTRUCTION

- Specialized tools have been developed to complete shaping work accurately.

Crown…

Cross slope…

TRAIL SURFACE CONSTRUCTION

- Smart levels are also useful for checking cross and running slope on forms and carpentry work.

Shoot for 2% cross slopes on these features…

TRAIL SURFACE CONSTRUCTION

- Compact…Compact…Compact

Water source is necessary….

Aggregate and native soil tread…

POST CONSTRUCTION MONITORING

- Assume some modifications post construction
- 1-3 post construction visits after first wet season

90% of issues related to cross slope and tread …

MAINTENANCE

- Accessible trails require general maintenance like any other conventional trail with special attention given to unique accessible features

MAINTENANCE

- Cross Slopes

Normal wear, settlement, poor material selection, low capability soils, severe storm events, unauthorized uses, …

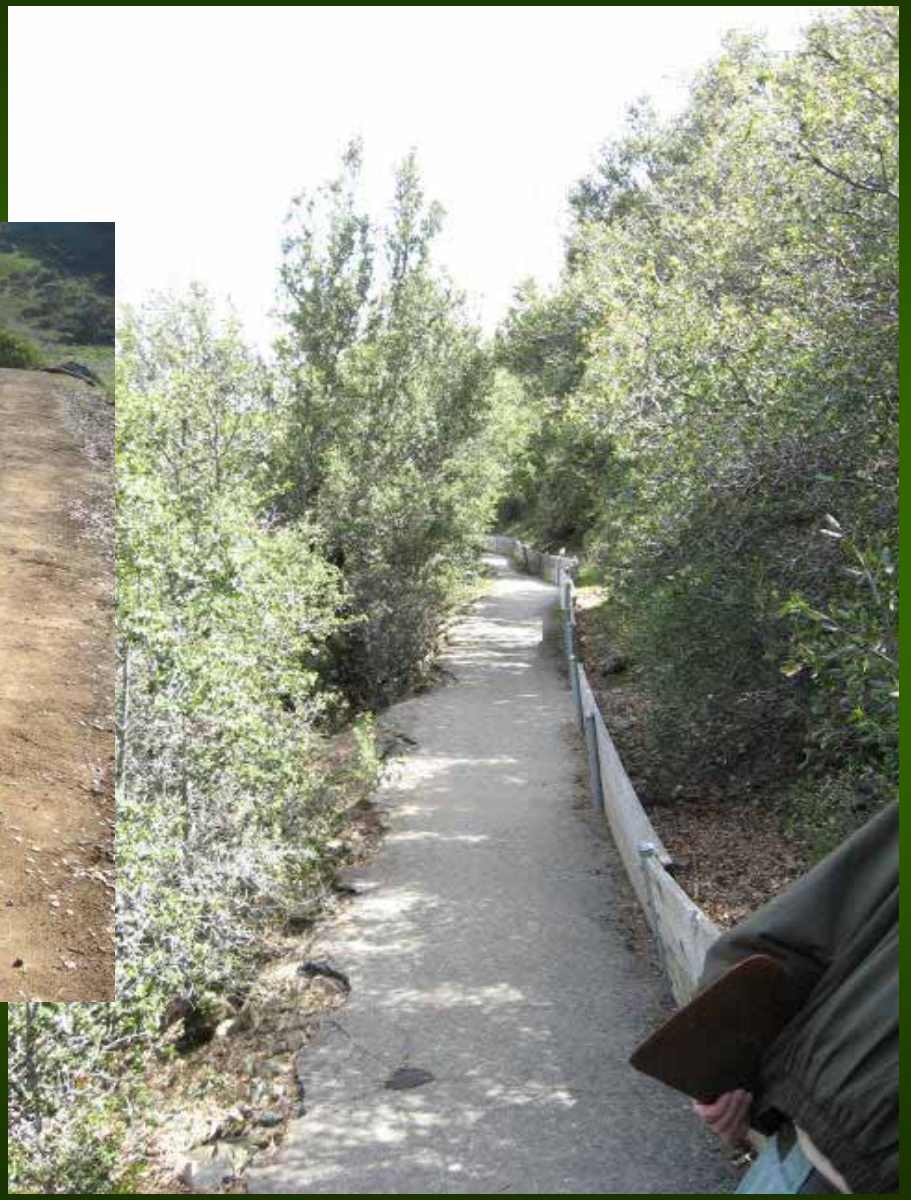
MAINTENANCE

- Firm and Stable Surface
- Tread Condition

Rodents, vegetation, ponding, low capability soils, poor material selection, unauthorized uses…

MAINTENANCE

- Width



Vegetation, sloughing, eroded outside edge…..

MAINTENANCE

- Drainage and Erosion

Entrenchment through normal wear, poor layout, overly flat cross slope, low capability soils, unauthorized uses, off-site modifications…

MAINTENANCE

- Protruding Objects and Debris

Rocks, roots, branches, fallen trees…

2” max. vertical barrier…

36” min. trail width…

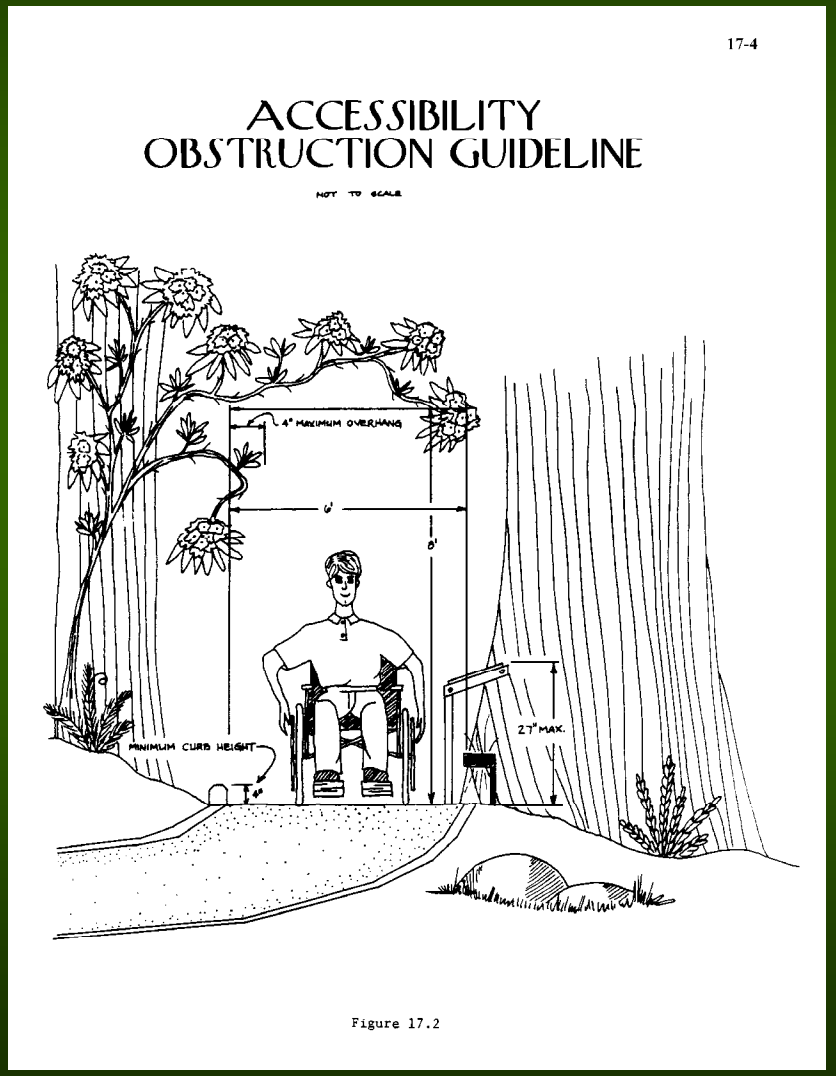
MAINTENANCE

- Perimeter and Overhead Clearance

Vegetation, branches…

6’ clear width

8’ vertical clearance



MAINTENANCE

General Maintenance- Twice Annually

- Spring
  - Storm Repair
  - Brushing
  - Spaying Tread (if necessary)
- Fall
  - Drainage Maintenance (slough and berm)
  - Debris Removal

MAINTENANCE

Take home messages….

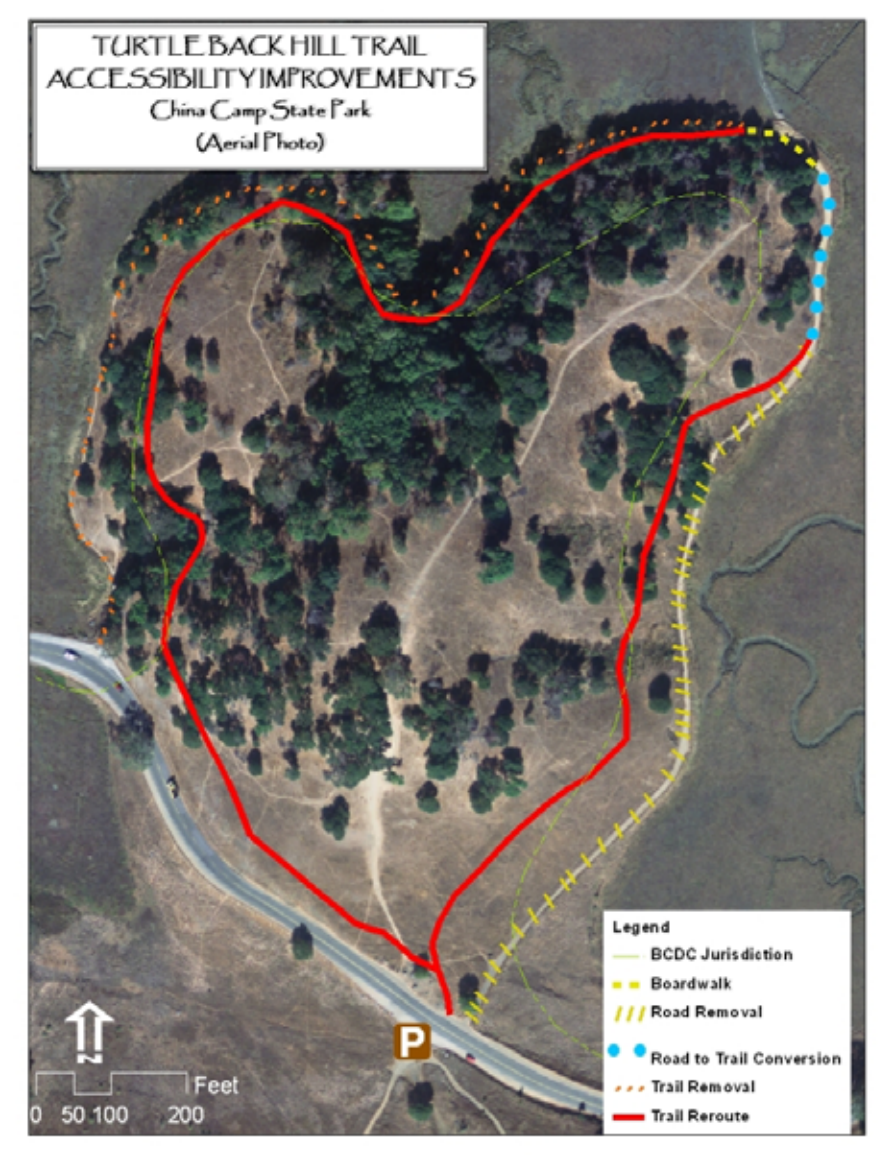
Be sure that an adequate maintenance budget or program is part of your accessible trail…

or

We are just building “easy-barrier free” trails…

CASE STUDIES

TURTLE BACK HILL TRAIL
CHINA CAMP STATE PARK



TURTLE BACK HILL TRAIL

ENVIRONMENTAL ISSUES

AVOIDANCE MEASURES

NATIVE GRASSES

CLAPPER RAIL

SALT MARSH HARVEST MOUSE

TURTLE BACK HILL TRAIL

TRAIL REROUTES

BEFORE

BEFORE

BEFORE

AFTER

AFTER

AFTER

TURTLE BACK HILL TRAIL

STRUCTURES

BEFORE

ROCK WALLS

DRAIN LENS

AFTER (BOARDWALK)

ARMORED DRAIN

AGGREGATE SURFACE

TURTLE BACK HILL TRAIL

PARKING

BEFORE

BEFORE

AFTER

AFTER

TURTLE BACK HILL TRAIL

SIGNS

BEFORE

AFTER

DETECTABLE SURFACE

TURTLE BACK HILL TRAIL

MITIGATION AND REVEGATATION

BEFORE

BEFORE

TREE PLANTING

AFTER

AFTER

TRAIL REMOVAL

TURTLE BACK HILL TRAIL

SUSTAINABILITY AND MAINTENANCE ISSUES

SEEPS

SLOUGHING/

SETTLEMENT

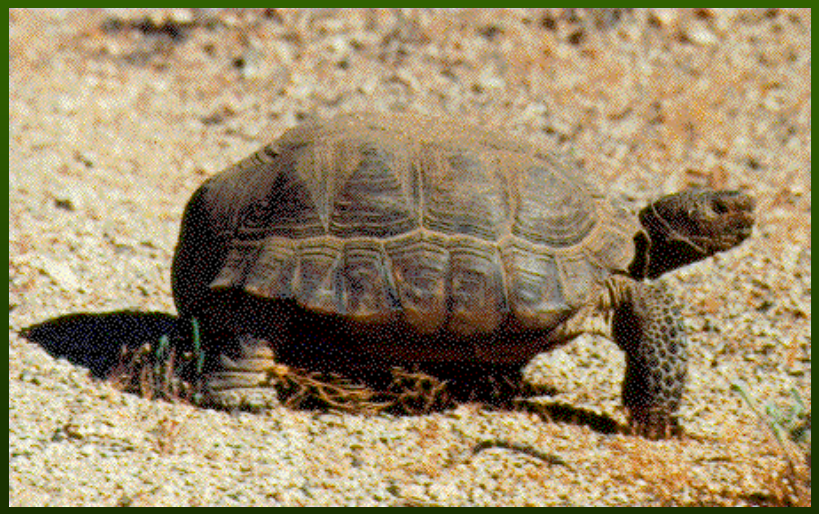
DOWEN NATURE TRAIL
SADDLEBACK BUTTES STATE PARK

DOWEN NATURE TRAIL

ENVIRONMENTAL ISSUES

- Mojave Ground Squirrel
- Desert Tortoise
- Joshua Tree

- Mitigated Negative Declaration
- USFWS/DFG
- Monitor/Land Purchase



DOWEN NATURE TRAIL

SITE CONTRAINTS

- Extreme temperature conditions
- Sand storms/ heavy seasonal rains
- Sandy and rocky soil conditions
- Rodent Activity

DOWEN NATURE TRAIL

THE TRAIL

- 3000’ concrete trail on desert floor
- 600’ aggregate base trail on rocky knoll

DOWEN NATURE TRAIL

OTHER AMENITIES

- 3 parking spaces (top and bottom)
- Restroom
- Visitor Center
- Trailhead Signage
- Drinking Fountain